

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of:)	
)	
Airborne Use of 700 MHz)	PS Docket No. 13-87
Public Safety Narrowband)	
Air-Ground Channels By)	
The United States and Canada)	

**COMMENTS OF
THE STATE OF MARYLAND**

DA 17-251

**PUBLIC SAFETY AND HOMELAND SECURITY BUREAU AND INTERNATIONAL BUREAU
SEEK COMMENT ON AIRBORNE USE OF 700 MHZ PUBLIC SAFETY
NARROWBAND AIR-GROUND CHANNELS BY THE UNITED STATES AND CANADA**

The State of Maryland submits these Comments in response to the Federal Communications Commission’s (“Commission”) Public Notice in the above-captioned docket seeking comment on arrangements necessary to allow 700 MHz aircraft-borne radios to communicate on air-ground channels in the 700 MHz public safety narrowband spectrum (769-775/799-805 MHz) along the U.S. - Canada border.¹

In particular, the Commission sought comment on how to best provide reliable and seamless air-ground communications in the 700 MHz frequency band in the U.S. and Canada, while avoiding undue disruption of existing terrestrial facilities in both countries.

¹ See Public Notice, DA 17-251, Public Safety And Homeland Security Bureau And International Bureau Seek Comment On Airborne Use Of 700 MHz Public Safety Narrowband Air-Ground Channels By The United States And Canada, released March 15, 2017 (“Public Notice”).

The State of Maryland and the National Public Safety Telecommunications Council (“NPSTC”) led the original effort to seek the reallocations of these 700 MHz frequencies² in the United States. Now, along with the National Regional Planning Committee (“NRPC”) and APCO International (“APCO”), Maryland and NPSTC have evaluated air-ground propagation issues, based upon the potential Canadian aircraft operational parameters described in the Public Notice and believes that there are approaches that recognize the unique operating characteristics of Canada and identify 700 MHz frequencies for Canadian air-ground use that minimize impact to American public safety communications. Below, Maryland will provide a description of the technical factors that could potentially affect its State Police air-ground and Maryland FiRST operations and as requested in the Public Notice, offer alternatives designed to recognize the unique needs of Canada while minimizing adverse impact to public safety communications in the United States.

INTRODUCTION

The State of Maryland appreciates the opportunity to respond to the Commission’s Public Notice as its State Police operates a fleet of ten (“10”) rotor wing and three (“3”) fixed wing aircraft on a statewide basis in support of law enforcement, emergency medical, and many other public safety services. Maryland also has many 700 MHz fixed base transceivers located on mountain tops in the western portion of the State that are essential parts of its “Maryland FiRST” statewide public safety communications system.³ These Maryland FiRST frequencies, along with MSP aircraft operating on air and ground channels, could be affected by Canadian aircraft

² The eight 12.5 kilohertz bandwidth channels were previously reserved for secondary trunking operations. *Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations in the 769-775/799-805 MHz Bands; National Public Safety Telecommunications Council Petition for Rulemaking on Aircraft Voice Operations at 700 MHz, Report and Order*, 29 FCC Rcd 13283, 13289-91, paras. 13-21 (2014) (“700 MHz Narrowband R&O”).

³ In Garrett County, Maryland’s most western jurisdiction, several 700 MHz RF sites are constructed on mountain tops with 330’ or 430’ towers installed on elevations of approximately 3,000’ AMSL.

operating in 700 MHz under the operational parameters discussed in the Public Notice if “state”⁴ or “general pool”⁵ 700 MHz frequencies were used by Canada for air-ground operations. Maryland FiRST represents a taxpayer investment of over \$345,000,000 to provide a contemporary statewide public safety communications system for its first responders linking federal, State, and local government emergency services organizations. By time of completion, the system will consist of approximately 140 radio sites all operating entirely within the 700 MHz frequency band.

The Public Notice seeks comment on arrangements necessary to allow 700 MHz aircraft-borne radios to communicate on air-ground channels in the 700 MHz public safety narrowband spectrum (769-775/799-805 MHz) along the U.S. - Canada border. In particular, the Public Notice sought comment on how to best provide reliable and seamless air-ground communications in the 700 MHz band in the U.S. and Canada, while avoiding undue disruption of existing terrestrial facilities in both countries. The request for comments is vitally important as dedicated 700 MHz air-ground frequencies are very limited and serve a unique purpose in supporting public safety and first responders. The eight (“8”) 700 MHz air-ground frequency pairs⁶ are unique in that no other frequency band has public safety spectrum primarily dedicated for this purpose. All other public safety radio spectrum delimits air-ground operations to secondary operations.⁷ With secondary operations status, public safety aircraft may not render interference and, if encountered, must accept such interference.

The Commission noted in its’ *Report and Order, Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations in the 769-775/799-805 MHz Bands*, FCC 14-172,

⁴ See 47 CFR §90.531(b)(5)

⁵ See 47 CFR §90.531(b)(6)

⁶ See 47 CFR §90.531(b)(7)

⁷ See 47 CFR §90.423

released October 24, 2014 (“*Report and Order*”) that cross-border agreements with Canada for the 700 MHz band apply only to terrestrial land mobile operations along the border, and that the agreement did not contemplate airborne operations. As a result, the Commission stated it would consider applications proposing airborne use of the air-ground channels within 315 kilometers of the international borders only on a case-by-case basis until new “coordination zones or international procedures” can be negotiated. Maryland has evaluated air-ground propagation issues, based upon the potential Canadian aircraft operational parameters described in the Public Notice, which were unknown to the Commission when the *Report and Order* was released, and believes that areas of the United States within 375 kilometers of the international border could be affected by the higher operating altitudes and power of Canadian aircraft.

In these comments, Maryland will provide a description of the technical factors that could potentially affect our air-ground and Maryland FiRST operations and as requested, offer alternatives designed to recognize the unique needs of Canada while minimizing adverse impact to public safety communications in the United States. We believe that there are alternatives to identifying existing “general pool” or “state” 700 MHz frequencies as licensees in border areas already operate under a restricted pool of these frequencies. By removing additional frequencies from potential use, American licensees operating within “Line A”⁸ areas suffer an additional limitation as to available spectrum in the 700 MHz frequency band. We believe that Maryland can offer “alternative approaches that would support seamless and reliable air-ground communications along the border, consistent with not unduly affecting terrestrial licensees” as specified in DA 17-251.

⁸ The definition of Line A in Section 90.7 is taken from Paragraph 2 of Arrangement A contained in the revised Technical Annex to the agreement between the United States and Canada on the "Coordination and Use of Radio Frequencies Above 30 Megacycles per Second", signed at Ottawa on June 16 and 24, 1965.

ISSUES OF IMPORTANCE

Technical and operational issues related to air-ground communications introduce unique factors that merit careful analysis. In this section of Maryland's comments, we seek to identify those issues that merit particular importance. These areas are all identified to assist the Commission in evaluating important technical and operational issues that merit inclusion when reviewing air-ground operations with Canada's regulatory organization, Innovation, Science, and Economic Development ("ISED").

Operating Environment

In the Commission's Public Notice, it is indicated that potential Canadian operating parameters, i.e., operations at up to 10,000' above ground level ("AGL") with ten ("10") watts of RF output, are to be negotiated. These operating parameters are significantly different than the Commission's requirements that limit American operating altitudes to 1,500' AGL with two watts of effective radiated power ("ERP").

It is easy for one to suggest that Canada adopt the technical parameters as established by the Commission for air-ground operations as found in §90.531(b)(7) of the Commission's rules ("Subpart 531"). However, this obviates the fact that Canadian public safety officials understand their requirements better than those of us in the United States. As such, Maryland believes that the Commission and commenters should respect the technical parameters as proposed by Canada and identify solutions that support first responders in both countries provided that new frequencies outside of the eight American air-ground channels are negotiated between the FCC and ISED.

While Maryland remains conditionally⁹ satisfied with the technical and operational limitations of Subpart 531, as indicated in the Public Notice, perhaps western American states, with operating environments more akin to rural parts of Canada, may wish to revisit the issues of aircraft operating altitudes and power limitations. Our assumption is that unlike Maryland, Canada may rely on rotor and fixed wing aircraft with the latter flying at higher altitudes and faster speeds to reach sparsely populated parts of the country. As such, all comments have been based upon the assumption that ISED understands Canadian public safety communications' issues completely and this Public Notice should not be viewed through the prism of American protocols and regulatory requirements.

International Frequency Coordination

One of the great challenges with identifying frequencies for air-ground use in Canada relates to international coordination. A major task for Canada and the United States will be to determine those areas where coordination and protection from interference after permitted RF power and operating altitudes are finalized. Today, "Line A" focuses on land mobile radio use, not air-ground operations. In the instant matter, the issue is air-ground communications which offer entirely different operating characteristics than land based communications. When negotiating the assignment of air-ground frequencies, the Commission and ISED, as well as Regional Planning Committees ("RPCs") and/or states, may be involved with coordination depending upon the anticipated areas of operation.

⁹ Maryland's satisfaction with the existing power limitations of Subpart 531 is offered conditionally as the air-ground system has evolved from the Eastern Shore to very limited parts of the State's mountainous areas. When operations begin in the far western and mountainous counties of the State, anticipated in FY 2018, operational experience may require Maryland to identify the need for amendments to the current radio RF power output restrictions.

This reality engenders two important issues. First, if frequencies outside of those identified in Subpart 531 can be identified, coordination issues may be minimal. Secondly, if frequency changes within Subpart 531 are proposed, what are the concomitant impacts to public safety operations in both countries? States and RPCs affected by the current “Line A” requirements already operate under restrictions as to the availability of 700 MHz frequency pairs. A further reduction in the number of available 700 MHz frequency pairs is not a desired outcome for American public safety.

“Line A” Issues

The Commission and Canada have negotiated what is called “Line A” which is used to identify those areas proximate to the international border where *land* (emphasis supplied) mobile radio issues require coordination. But as noted in Public Notice, the issue upon which the Commission seeks comments relates to air-ground operations which are substantively different from land mobile communications. With air-ground operations, the criticality of “line of site” transmission is greatly enhanced and as Maryland has experienced, a two watt signal at 1,500’ AGL can easily reach a fixed base receiver unobstructed by mountains, with fifty (“50”) miles of separation. For any 700 MHz channels used by Canada, with five times the power of an American aircraft and up to more than six times the altitude limit in the United States, one can easily assume that signals will travel much further.

Our research into the issue of signal propagation, based upon a Canadian aircraft operating with ten watts of RF output at 10,000’ AGL, has been assessed technically by RLA Communications (“RLA”). In the RLA assessment, it is believed that a radio transmission proximate to the international border at 10,000’ AGL and broadcasting with ten watts RF output into a unity gain antenna (or antennas as often aircraft use an antenna above and below the

fuselage) will travel approximately 375 kilometers or roughly 225 statute miles. The technical factors assessed to arrive at this conclusion are detailed below.

The 225 mile distance from the Canada-US border is derived by considering a scenario consisting of an aircraft flying at 10,000 feet above ground level within Canadian airspace and transmitting with ten (“10”) watts of power through a 0 dBd omni-directional antenna at 700 MHz. The propagation model used is best described as “Free Space Loss” plus the Epstein-Peterson multi-knife diffraction method without land use land cover attenuation. Utilizing a 50% temporal and spatial coverage probability, one also ensures contemplating a worst case co-channel interference case when the transmission emanating at an aircraft is received by 10 dBd 700 MHz antenna mounted on a structure 300 feet above ground level. Should the Commission staff have additional technical questions regarding the methodology to determine the potential area of Canadian aircraft operations, Maryland will be pleased to provide additional information.

Air-to-Ground 700 MHz Propagation Calculated to -128 dBm Effective Sensitivity

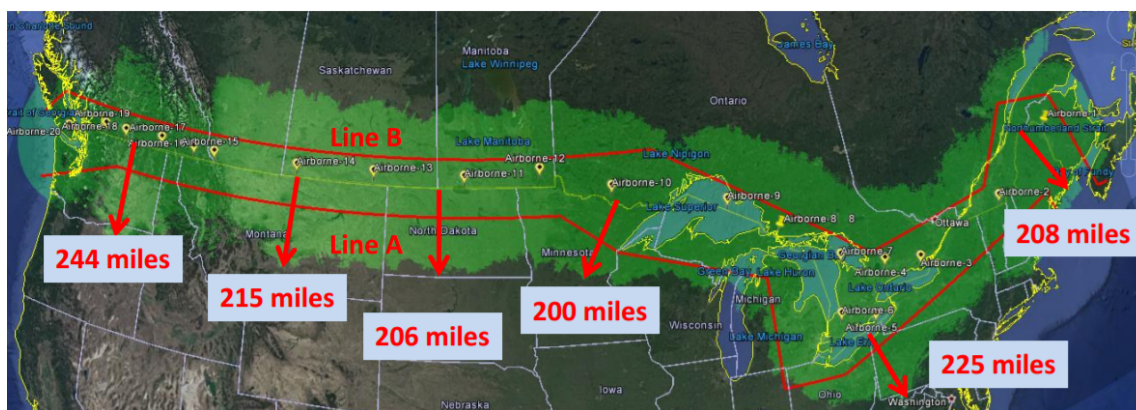


Figure 1 - Examples of anticipated Canadian propagation of aircraft flying proximate to the international border at 10,000' AGL broadcasting with ten watts RF output

Methods of Operation

A critical issue for consideration relates to the manner in which Canada will use air-ground frequencies. As an example, if Canada plans to operate in the duplex mode; i.e., separate transmit and receive frequencies, American ground based fixed stations within 225 miles of the border and designed to receive transmissions on the higher 700 MHz frequency, typically identified as the “mobile” side, will be potentially susceptible to interference from Canadian aircraft flying proximate to the international border.

Conversely, simplex operations may not produce the same level of interference, as the typical 700 MHz station in America operates either as part of a trunked radio system or with a conventional repeater, which the Commission limits.¹⁰ In the United States, the fixed trunked or conventional repeater base station typically monitors the upper “receive” frequency, not the lower frequency that Canada would employ in a simplex operating environment. Mobile stations in the United States, associated with an American fixed base station, would potentially be subject to the reception of interference from Canadian aircraft operating in the simplex mode, however; the potential offending signal level from Canada could be less pronounced with land based mobile and portable radios than a fixed base station receiver.

Because the method of operations in Canada would potentially affect American operations, Maryland recommends that the Commission include the proposed methods of operation; i.e., duplex or simplex, with ISSED during negotiations unless the preferred method, described in the next section of Comments, is adopted. Using the “preferred” recommendation,

¹⁰ See 47 CFR §90.537(a)

issues of frequency coordination are significantly reduced and permit Canada to operate with minimal, if any, impact to American public safety frequencies.

Proposed Frequency Allotments - Preferred

One method of facilitating air-ground channels for Canada would be to identify frequencies that minimize the need for international coordination and impact to public safety communications in the United States. As such, Maryland encourages the Commission to consider an approach that does not affect established public safety land mobile radio assignments as found in Subpart 531.

The Commission has established certain guard bands in its Upper 700 MHz Band Plan between land mobile public safety and broadband communications. Guard Band B is comprised of 775-776 and 805-806 MHz. All current American licensees of this spectrum are television translator stations, allowed to use the 700 MHz spectrum on a secondary basis.¹¹ The frequencies were originally part of the Commission's 700 MHz public safety land mobile radio band plan as noted in Figure 2 suggesting that most 700 MHz radios would be already type certified and configured to operate on frequencies within this spectrum. Informal testing has confirmed that some 700 MHz radios, such as the Motorola Solutions APX series, are programmable to frequencies in this band.¹² Other tests suggest that EF Johnson and Harris subscriber devices are also programmable to frequencies in the 775-776 and 805-806 band plan. Additional testing would be required to confirm the ability of mobile and portable radios to be programmed within the frequencies identified illustratively on the follow page.

¹¹ See 47 CFR §74.602

¹² Informal testing by San Diego County confirmed that the current iteration of Motorola's CPS software will program 12.5 KHz frequencies in APX radios. Maryland determined that EF Johnson radios accepted programming in the 775-776 and 805-806 MHz bands as well. Harris radios can also be programmed in this spectrum.

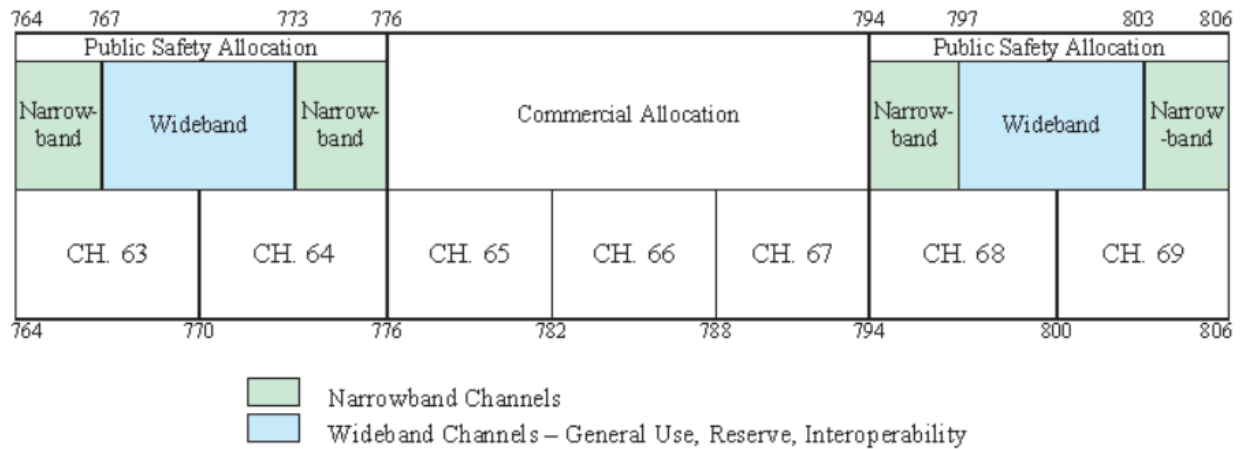


Figure 2 - FCC's Original Upper 700 MHz Bandplan

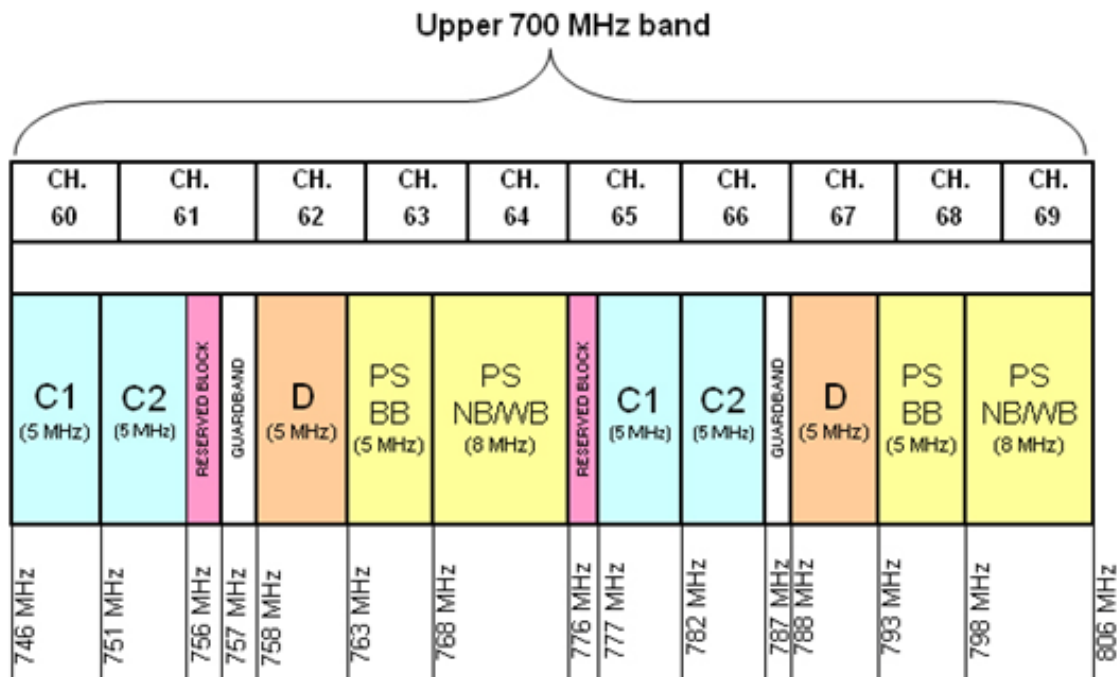
In Canada, the frequencies found within 775-776 and 805-806 MHz, used as American Guard Band B, are already parts of their allocated spectrum for public safety as noted in Figure 3. Maryland offers for consideration a plan that creates eight (“8”) new frequencies that parallel (the American) Guard Band B for the use of Canada within its borders including those areas proximate to the United States.

As importantly, by carving out eight new frequency pairs in 775-776 and 805-806 MHz, the challenges of international coordination would be de minimis. If both countries agree to an air-ground version of “Line A”, as mentioned earlier in our comments, Canada would be primary on these eight new air-ground channels. Any use in America would be below the air-ground equivalent of “Line A” and subject to further rule making by the Commission.

There is another important reason for considering this approach. In the Public Notice, the Commission “assumed” that Canada would allot the requested frequencies by power, permitted altitude, and other factors. Through a redesignated air-ground version of “Line A” and primary assignment of the eight frequencies for Canadian operations, it would be unnecessary to vary

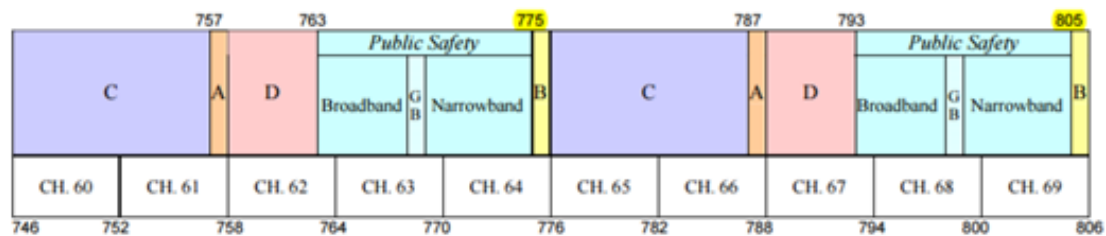
coordination issues or future negotiations with Canada. All of the eight proposed frequencies illustratively depicted in Figure 4 could operate at 10,000' AGL or higher with ten or more watts of power without impact to American public safety communications. Canada could also be free to create additional air-ground channels in the 775-776 and 805-806 frequency bands as it determines. The Commission's assumption of varying power levels and altitudes could be removed providing Canada with complete flexibility to operate as desired for their public safety operations.

Canada Upper 700 MHz Bandplan:



U.S. Upper 700 MHz Bandplan: (dated FCC picture-- D block now public safety BB)

Upper 700 MHz Band Plan



Block	Frequencies (MHz)	Bandwidth	Pairing	Geographic Area Type	No. of Licenses
C	746-757, 776-787	22 MHz	2 x 11 MHz	REAG	12
A	757-758, 787-788	2 MHz	2 x 1 MHz	MEA	52
D	758-763, 788-793	10 MHz	2 x 5 MHz	Nationwide	1*
B	775-776, 805-806	2 MHz	2 x 1 MHz	MEA	52

Figure 3 - Canadian and American Upper 700 MHz Allotment of Frequencies

Joint Operations and 7AG88D

Although we advocate for unique Canadian air-ground frequencies, we believe that there is a benefit to permitting Canada's first responders to share in the limited use of American air-ground frequencies under two circumstances. First, Canada should be permitted to conduct joint operations in border areas with American public safety using the air-ground channels established by the Commission. During joint operations and while operating on American primary frequencies, Canada would follow the same power and altitude restrictions as United States first responder aircraft.

Secondly, Maryland encourages the Commission to designate 774.61875 MHz, identified by the American National Standards Institute ("ANSI") as 7AG88D¹³, for improvised landing zone coordination. In public safety, one of the most dangerous parts of a flight mission is landing in improvised areas. These landing areas often contain utility poles and other obstructions that may be difficult for a pilot to see from the air when landing, particularly at night and during periods of poor visibility. 7AG88D was identified by the Maryland State Police Aviation Unit as a critical need that permits aircraft to have immediate and direct communications with ground personnel who may instantly alert the aircraft's pilot to danger. In negotiations with Canada and as part of this Public Notice, Maryland asks the Commission to consider the designation of 7AG88D as a simplex frequency in the United States for use in public safety aircraft landing coordinations and encourage ISED to harmonize the use with us. We believe that the need is sufficiently critical to make this a singular purpose for the frequency, similar to 121.5 MHz for international in-flight aircraft emergencies.¹⁴ In the alternative,

¹³ See APCO/NPSTC ANSI 1.104.3---2015

¹⁴ See 47 CFR §2.106

Maryland would ask that landing zone coordination be made a primary purpose with permitted secondary use for other purposes consistent with statute.¹⁵

Channel Designator	Fixed Base	Aircraft	Comments
7AG58 - US & Joint Ops with Canada	769.13125	799.13125	Power limited to 2 watts ERP at altitudes not to exceed 1,500' AGL
7AG60 - US & Joint Ops with Canada	769.63125	799.63125	Power limited to 2 watts ERP at altitudes not to exceed 1,500' AGL
7AG67 - US & Joint Ops with Canada	770.13125	800.13125	Power limited to 2 watts ERP at altitudes not to exceed 1,500' AGL
7AG68 - US & Joint Ops with Canada	770.63125	800.63125	Power limited to 2 watts ERP at altitudes not to exceed 1,500' AGL
7AG78 - US & Joint Ops with Canada	773.11875	803.11875	Power limited to 2 watts ERP at altitudes not to exceed 1,500' AGL
7AG80 - US & Joint Ops with Canada	773.61875	803.61875	Power limited to 2 watts ERP at altitudes not to exceed 1,500' AGL
7AG85 - US & Joint Ops with Canada	774.11875	804.11875	Power limited to 2 watts ERP at altitudes not to exceed 1,500' AGL
7AG 88D - US & Canada LZ Coordination	774.61875	774.61875	Exclusive use for landing zone coordination between aircraft and ground personnel
Canadian Air-Ground 1	775.00625	805.00625	Primary use in Canada with power and altitude restrictions set by ISED
Canadian Air-Ground 2	775.01875	805.01875	Primary use in Canada with power and altitude restrictions set by ISED
Canadian Air-Ground 3	775.03125	805.03125	Primary use in Canada with power and altitude restrictions set by ISED
Canadian Air-Ground 4	775.04375	805.04375	Primary use in Canada with power and altitude restrictions set by ISED
Canadian Air-Ground 5	775.05625	805.05625	Primary use in Canada with power and altitude restrictions set by ISED
Canadian Air-Ground 6	775.06875	805.06875	Primary use in Canada with power and altitude restrictions set by ISED
Canadian Air-Ground 7	775.08125	805.08125	Primary use in Canada with power and altitude restrictions set by ISED
Canadian Air-Ground 8	775.09375	805.09375	Primary use in Canada with power and altitude restrictions set by ISED

Figure 4 - Illustrative List of Potential US and Canadian Air-ground Frequencies

Proposed Frequency Allotments – Least Preferred

Recognizing that it is always important to consider alternatives to the method previously proposed and identified as the preferred approach, Maryland examined every part of Subpart 531(b) to assess alternatives. This review included:

1. Use of a subset of 700 MHz interoperability frequencies as found in Subpart 531(b)(1).
2. Use a subset of “reserve” 700 MHz frequency pairs.
3. Use of Subpart 531(b)(4) “nationwide 700 MHz itinerant channels.”
4. Use a subset of Subpart 531(b)(6) 700 MHz “general pool” channels.
5. Use a subset of Subpart 531(b)(3) 700 MHz “low power” frequency pairs.
6. Use a subset of Subpart 531(b)(5) “state” 700 MHz frequency pairs.

¹⁵ *Id.* 47 USC 337(f)

This review was conducted in terms of prioritization considering what we believe to be allotments having minimal to maximum impact upon American public safety. The review suggested that there are no good solutions to existing 700 MHz public safety alternatives as each has some impact on licensees within the 375 kilometer range of the international border with Canada that we identified earlier as the area potentially affected by Canadian aircraft operations.

With respect to general pool, state, and low power channels, public safety agencies within “Line A” areas already face restrictions as the availability of channels that have been designated as primary for the United States. To reduce the availability of spectrum for American general pool, low power, and state 700 MHz channel users imposes a double reduction if additional frequencies are deleted for Canadian primary air-ground use. As such, the potential reduction of these frequencies is considered to be the least desirable alternative. Notwithstanding this undesired approach of using channels as found throughout Subpart 531, should the Commission determine that the preferred approach of using 775-776 and 805-806 MHz frequencies is unworkable, then we would recommend a segmentation of Canadian primary 700 MHz air-ground channels based upon permitted power levels and restrictions as to altitudes as previously notated by the Commission in DA 17-251 footnote four.

Below, we initiate a brief discussion describing the impacts to American public safety if additional spectrum restrictions in 700 MHz are required.

1. Nationwide interoperability channels as found in Subpart 531(b)(1).

The thirty-two (“32”) existing 700 MHz nationwide interoperability channels are already harmonized with Canada. For high-power, high altitude Canadian aircraft,¹⁶ the impact of

¹⁶ Ten watts RF output at operating altitudes of up to 10,000’ AGL

reducing the number of interoperability channels incrementally would be preferable to reducing general pool, low power, and state 700 MHz channels.

2. Reserve 700 MHz Channel Pairs

In the *Report and Order*, the Commission released the twenty-four (“24”) 700 MHz reserve channels with certain limitations, including priority assignment in T-Band areas and use of deployable trunked radio systems in non T-Band areas. In consultation with the National Regional Planning Committee (“NRPC”) and the Chairman of Region 20, only Region 20 has actively assigned these former reserve channels pursuant to FCC guidelines.¹⁷ These frequencies if required and subject to harmonization with deployable trunked radio systems could be considered for Canadian air-ground operations including those using higher RF outputs and flying at altitudes above 1,500’ AGL.

3. Low power nationwide itinerant channels found in Subpart 531(b)(4)

The low power nationwide itinerant channels serve a unique purpose in that any eligible organization may receive FCC authority to operate on a nationwide basis.¹⁸ Maryland does have a use for these frequencies as special agents within the State’s Comptroller’s Office must travel out of state to conduct surveillance operations for products that are lawfully obtained in one state, but unlawfully imported into Maryland. As importantly, as the frequencies are harmonized with the United States, elimination of one or more of these channels has an adverse impact to Canada as well as America.

¹⁷ Region 20 made assignments to provide certainty for the Washington Metropolitan Area Transit System (“WMATA”), which is critical national infrastructure essential for the continuity of federal government operations. Additional assignments were made to replace T-Band spectrum and support the efforts of the Virginia State Police to reband 700 MHz operations as required for FirstNet. While all former “reserve channels” have been assigned, Region 20 does not anticipate that Canadian aircraft operations would affect any licensee in those areas for which the channels have been allotted.

¹⁸ See 47 CFR §90.523(b)(4)

4. General Pool 700 MHz channels

The vast bulk of 700 MHz frequencies, especially when combined with the former “reserve” channels, are found in the “general pool” and delegated to Regional Planning Committees for administration in conjunction with the Commission. Although there are three hundred and thirty-two (“332”) such frequency pairs, including the former reserve channels, it is very important for the Commission to recognize that licensees in “Line A” affected areas of the United States may only license a subset of the frequencies in coordination with ISED. Maryland recognizes that no major statewide system can operate solely on the ninety-six (“96”) state channels and as such, states often must seek support from RPCs in the assignment of general pool spectrum. Due to the limitations of sharing “state” 700 MHz spectrum with neighboring states, Maryland has requested in excess of twenty-five (“25”) general pool licenses from Region 20 with anticipation to seek more to complete the Maryland FiRST statewide public safety system. As such and recognizing that not only RPCs, but also states, must seek this spectrum, Maryland recommends that the Commission explore other options prior to deleting additional general pool 700 MHz channels for Canadian air-ground.

5. Use of low power spectrum found in Subpart 531(b)(3)

In the creation of the 700 MHz band, the Commission permits analog or digital operations on the low power 700 MHz channel pairs administered by the RPCs. This permitted use is unique as all other spectrum is required to operate utilizing digital technology.¹⁹ In discussions with the NRPC, Chairman Carter reported that some members, including those within “Line A” areas, utilize these frequencies for special purposes such as vehicular repeaters, an often cost effective method of supporting first responders operating with other technologies.

¹⁹ See 47 CFR §90.535

The users operating within “Line A” like other spectrum licensees must conduct operations in the United States on a subset of frequencies. In recognition of the special uses of these unique channels, members of the NRPC reported that these frequencies are extremely important and encourage the Commission and ISSED to identify alternatives.

6. Use of “state” 700 MHz channels

By far, these are the most critical frequencies for Maryland and other states proximate to the international border that have crafted statewide or regional systems using 700 MHz spectrum. The Commission did a very wise thing in creating geographical licenses for states; however, the caveat in the licensing of spectrum on a geographic basis was that states had to coordinate spectrum with neighbors. In addition to limitations from “Line A” parameters, states rarely are permitted to use all ninety-six (“96”) state channels unless they are large enough to be sufficiently distant from neighbors to re-use channels.²⁰ So we propose that the last source of Canadian air-ground spectrum be from the “state” channels as these frequencies are already delimited not only by “Line A” issues, but also allotment between neighboring states. If “state” channels are used for Canadian aircraft, states in “Line A” areas are affected three times; “Line A”, adjoining states, and loss of spectrum for Canadian air-ground. As such, Maryland strongly encourages the Commission to consider the use of “state” 700 MHz channels as a very last resort.

700 MHz Operational Harmonization

DA 17-251 also provides both countries with the opportunity to harmonize public safety operations in the 700 MHz frequency band. There are two instances where additional harmonization is needed for international operations.

²⁰ Maryland has negotiated a comprehensive “state” 700 MHz channel with all neighbors and generally requires non-intersecting 22 dBu contours for permitted channel reuse.

The Aviation Unit of the Maryland State Police has previously identified the need to establish 7AG88D as a landing zone coordination channel. As stated previously, we believe that it is important to establish this channel for use in both the United States and Canada under the current guidelines of the Commission. However, since the proposed use of the channel is anticipated to be at low altitudes where aircraft pilots and ground based first responders are coordinating landings in improvised landing zones, Canadian use of the frequency at up to ten watts is not considered to be a critical issue.

As a second issue of harmonization, Maryland recommends that the Commission and ISED consider the six 700 MHz frequencies identified for deployable trunked radio systems.²¹ The issue of harmonization is appropriate to this Public Notice as the Commission should notify Canada of its action in establishing these six 700 MHz frequency pairs and ensure that they are not used for Canadian air-ground operations. By harmonizing these channels and their mobile pairs, along with 7AG88D, the United States and Canada would have a largely harmonized 700 MHz band plan.

Channel	FB TX	MO RX
Deployable Trunked System Channel A	769.23125	799.23125
Deployable Trunked System Channel B	769.38125	799.38125
Deployable Trunked System Channel C	769.73125	799.73125
Deployable Trunked System Channel D	769.88125	799.88125
Deployable Trunked System Channel E	774.51875	804.51875
Deployable Trunked System Channel F	774.86875	804.86875

Figure 5 - Deployable trunked 700 MHz channels with channels E and F designated as control channels

²¹ See DA 15-483 released April 23, 2015; https://apps.fcc.gov/edocs_public/attachmatch/DA-15-483A1_Rcd.pdf

CONCLUSIONS

Maryland has attempted to introduce the concept of asking Canada to consider the use of frequencies in 775-776 and 805-806 MHz for air-ground operations. Through the use of this spectrum, issues of international coordination would be minimal and the unique operational requirements of Canada could be addressed without impact to the first responders of the United States. In the alternative, we have identified spectrum as found in Subpart 531(b) that while less desirable than 775-776 and 805-806 MHz, could be considered with varying levels of impact to American public safety. Finally, we introduce two issues, 7AG88D and deployable trunked radio system frequencies, as issues for negotiation with Canada to substantively complete harmonization with the United States operations in the 700 MHz public safety frequency bands.

Respectfully submitted,

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